

The genus *Conocephalus* (Orthoptera, Tettigoniioidea) in China

MIN ZHOU¹, WEN-XUAN BI² & XIA-WEI LIU³

Shanghai Entomological Museum, CAS Shanghai 200032.

E-mail: ¹zhoufang73@sina.com; ²insectb@163.com; ³liuxianwei2008@163.com

Abstract

A revision of *Conocephalus* Thunberg and its relatives from China is reported. One new combination *Conocephalus brevivalva* (Shi *et al.*, 2005), one new Chinese record *Conocephalus oceanicus* (Le Guillou, 1841) and one new species *Conocephalus shanghaiensis* **sp. nov.** are presented. The type specimens are deposited in the Shanghai Entomological Museum, CAS.

Key words: *Conocephalus*, revision, China, new species

Introduction

Conocephalus is reviewed for China. Four subgenera are represented thus far in the Chinese fauna. A rearrangement for several species is presented. We now consider that *Conanalus brevivalva* (Shi *et al.*, 2005) should be transferred to *Conocephalus* Thunberg. A record of a species new to the fauna is presented. Species are assigned to the recognized *Conocephalus* subgenera. *C. (Xiphidion) xiai*, *C. (Xiphidion) differentus*, *C. (Xiphidion) emeiensis* should be moved into the subgenus *Conocephalus*, because they possess the prosternum without spines and male cercus with two internal teeth. We consider that *C. (Anisoptera) yunnanensis* Shi et Feng, 2009 should be transferred to *Conanalus* because it bears a single spine at the apex of hind femora and bright body color. As a result, there are 21 species of *Conocephalus* known from China, including the new species, and these species belong to 4 subgenera.

Conocephalus Thunberg, 1815

Conocephalus Thunberg, 1815: 214; *Anisoptera* Bethold, 1827: 409; *Neoxiphidion* Karny, 1912: 8; *Palotta* Walker, 1869: 249; *Xiphidion* Audinet-Serville, 1831: 159; *Xiphidium* Burmeister, 1838: 707; *Xiphidium* Fieber, 1853: 170. Type species: *Gryllus* and *Tettigonia* and *conocephalus* Linnaeus, 1767

Body small. Vertex more or less laterally flat. Apex of vertex round, not surpass the frontal fastigium, and usually higher than head by lateral view. The lateral lobes of pronotum oblique triangular shaped, with a translucent gibbons' area near the hind margin above the auditory organ. Tegmina and hind wings developed or shortened. Fore and mid femora usually lack of spines at their ventral side. Hind femora with two spines on knees. Fore and mid tibiae lack of dorsal spurs, and with short ventral spurs. Tympanum on fore tibiae closed. Prosternum with or without two spines. Male cercus with inside teeth. Ovipositor sword-shaped, brim smooth or with tiny teeth.

Key to Chinese species

- 1 (2) Fastigium of vertex considerably narrower than the 1st antennal segment, ovipositor 1.5–1.7 times shorter than hind femora...Subgenus *Amurocephalus* Storozhenko, 2004..... 1. *C. (Amurocephalus) chinensis* (Redtenbacher, 1891)
- 2 (1) Fastigium of vertex slightly narrower than 1st antennal segment
- 3 (22) Male cercus with two teeth inside
- 4 (15) Prosternum without spines..... Subgenus *Conocephalus* Thunberg, 1815
- 5 (8) Tegmina far surpassing apices of hind femora. Hind wings distinctly longer than tegmina
- 6 (7) Body larger (with wings 35–47 mm). Mid femora with ventral spines. Hind tibiae with two pairs of ventrally apical spurs.....2. *C. (Conocephalus) bambusanus* Ingrisch, 1990
- 7 (6) Body smaller (with wings 30 mm). Mid femora without ventral spines. Hind tibiae with one pair of ventrally apical spurs 3. *C. (Conocephalus) xiai* Liu et Zhang, 2007
- 8 (5) Tegmina not reaching the apex of abdomen. Hind wings equal or a little longer than tegmina
- 9 (14) Hind femora with ventral spines
- 10 (11) Tegmina short, not beyond two times length of pronotum4. *C. (Conocephalus) brevivalvus* (Shi et al., 2005)
- 11 (10) Tegmina beyond twice length of pronotum
- 12 (13) Between fastigium of vertex and frontal fastigium with a broad groove. Male subgenital plate with tubercular styles.....5. *C. (Conocephalus) sulcifrons* Xia et Liu, 1992
- 13 (12) Fastigium of vertex connecting to frontal fastigium. Styles of male subgenital plate normal 6. *C. (Conocephalus) differentus* Shi et Liang, 1997
- 14 (9) Hind femora without ventral spines.....7. *C. (Conocephalus) emeiensis* Shi et Zheng, 1999
- 15 (4) Prosternum bispinose Subgenus *Xiphidion* Serville, 1831
- 16 (19) Body larger and stronger (more than 20 mm).
- 17 (18) Male cercus with apex pointed, with 2 internal spines. Length of ovipositor 18 mm..... 8. *C. (Xiphidion) guangdongensis* Shi et Liang, 1997
- 18 (17) Male cercus with apex obtuse, with 1 internal spine and 2 teeth at the extreme apex. length of ovipositor 25 mm9. *C. (Xiphidion) liangi* Liu et Zhang, 2007
- 19 (16) Body smaller and slender (less than 15 mm).
- 20 (21) Male 10th abdominal tergite with a pair of obtuse lobes. Ovipositor not reaching apices of hind femora 10. *C. (Xiphidion) bidentatus* Shi et Zheng, 1994
- 21 (20) Male 10th abdominal tergite with a small obtuse triangular projection. Ovipositor surpass apices of hind femora 11. *C. (Xiphidion) oceanicus* (Guillou, 1841)
- 22 (3) Male cercus with one tooth inside Subgenus *Anisoptera* Latreille, 1829
- 23 (32) Hind femora with ventral spines
- 24 (27) Hind wings shorter than tegmina
- 25 (26) Hind femora with knees darkened 12. *C. (Anisoptera) giantius* (Matsumura et Shiraki, 1908)
- 26 (25) Hind femora unicolorous 13. *C. (Anisoptera) japonicus* (Redtenbacher, 1891)
- 27 (24) Hind wings extending beyond the tegmina by more than 1.5 mm
- 28 (31) Hind femora unicolorous
- 29 (30) Male 10th abdominal tergite with a pair of obtuse lobes. Ovipositor not reaching apices of hind wings 14. *C. (Anisoptera) longipennis* (De Haan, 1842)
- 30 (29) Male 10th abdominal tergite with a pair of pointed lobes. Ovipositor surpassing apices of hind wings..... 15. *C. (Anisoptera) discolor* (Thunberg, 1815)
- 31 (28) Knees of hind femora darkened 16. *C. (Anisoptera) melanus* (De Haan, 1842)
- 32 (23) Hind femora without ventral spines
- 33 (38) Tegmina distinctly surpassing apex of hind femora. Hind wings longer than tegmina
- 34 (35) Fastigium of vertex with strongly divergent lateral margins. Tegmina with blackish spots 17. *C. (Anisoptera) maculatus* (Le Gouillou, 1841)
- 35 (34) Fastigium of vertex with almost parallel lateral margins. Tegmina without blackish spots
- 36 (37) Ovipositor longer than hind femora 18. *C. (Anisoptera) gladius* (Redtenbacher, 1891)
- 37 (36) Ovipositor shorter than hind femora 19. *C. (Anisoptera) shanghaiensis* **sp. nov.**
- 38 (33) Tegmina not reaching the apex of abdomen. Hind wings shorter than tegmina
- 39 (40) Male tegmen with pointed apex. Ovipositor 1.8–2.1 times long as hind femora 20. *C. (Anisoptera) percaudatus* Bey-Bienko, 1955
- 40 (39) Male tegmen with broadly rounded apex. Ovipositor not longer than hind femora..... 21. *C. (Anisoptera) beybienkoi* Storozhenko, 1981

Subgenus *Amurocephalus* Storozhenko, 2004

Conocephalus (*Amurocephalus*) Storozhenko, 2004: 72; *Conocephalus* (*Anisoptera*) Ichikawa, 2006: 26; *Conocephalus* (*Amurocephalus*) Storozhenko et Paik, 2007: 50
Type species: *Xiphidium chinensis* Redtenbacher, 1891

Conocephalus (*Amurocephalus*) *chinensis* (Redtenbacher, 1891)

(Figs. F)

Xiphidium chinense Redtenbacher, 1891: 509; *Anisoptera chinense* Kirby, 1906: 277; *Xiphidium chinensis* Matsumura et Shiraki, 1908: 53; *Conocephalus* (*Xiphidion*) *chinensis* Karny, 1912: 10; *Conocephalus longipennis* Caudell, 1927: 7 (nec De Haan, 1842); *Xiphidium longipennis* Doi, 1932: 37; *Xiphidion maculatum* Kato, 1932: Pl. 47, fig. 3; *Xiphidion japonicum* Mori, 1935: 9, 16 (nec Redtenbacher, 1891); *Conocephalus* (*Xiphidion*) *chinensis* Chang, 1935: 46; *Conocephalus chinensis* Uvarov, 1926: 283; *Conocephalus* (*Xiphidium*) *chinense* Harz, 1969: 108; *Conocephalus* (*Anisoptera*) *chinensis* Storozhenko, 1986: 250; *Conocephalus* (*Amurocephalus*) *chinensis* Storozhenko, 2004: 73.

Distribution: China (Hebei, Neimenggu, Liaoning, Jilin, Heilongjiang, Shanghai, Jiangsu, Anhui, Shandong, Henan, Sichuan), Russia (the Far East), Korea, Japan.

Subgenus *Conocephalus* Thunberg, 1815

Conocephalus Thunberg, 1815: 214, 271; *Conocephalus* Rentz *et al.*, 1979: 7; *Conocephalus* (*Conocephalus*) Pinedo, 1985[1984]: 269; *Conocephalus* (*Conocephalus*) Otte, D., 1997: 37, 39
Type species: *Gryllus conocephalus* Linnaeus, 1767

Conocephalus (*Conocephalus*) *bambusanus* Ingrisch, 1990

(Figs. G)

Conocephalus bispinatus Pitkin, 1980: 351 (Partum); *Conocephalus bambusanus* Ingrisch, 1990: 113; *Conocephalus abispinatus* Xia et Liu, 1992: 162.

Distribution: China (Guangxi, Sichuan, Yunnan), Vietnam, Thailand, Malaysia, Indonesia.

Conocephalus (*Conocephalus*) *xiai* Liu et Zhang, 2007

(Figs. G)

Conocephalus xiai Liu et Zhang, 2007: 439.

Distribution: China (Anhui).

Conocephalus (*Conocephalus*) *brevivalva* (Shi *et al.*, 2005) **comb. nov.**

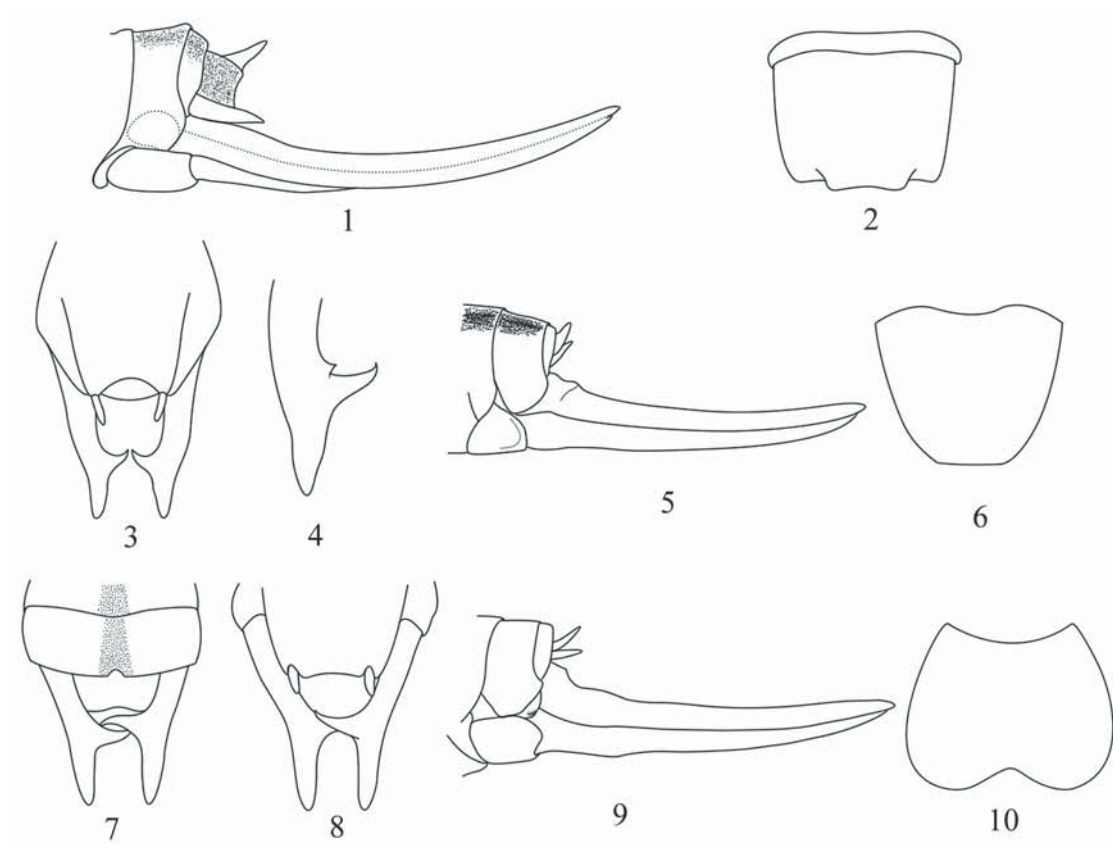
(Figs. 1–2, A, G)

Conanalis brevivalva Shi *et al.*, 2005: 84

Female with two spines at the outer side of the apex of mid femora, Ovipositor shorter than hind femora. For the above characters and without male material, we consider this species should be put into genus *Conocephalus* Thunberg.

Material studied. 1 female, Guadun, alt. 1000m, WuYi Mountain, Fujian Province, July 12th–15th 2009, Song Xiao-Bin leg.

Distribution: China (Hunan, Fujian).



FIGURES 1–10. 1–2. *Conocephalus (Conocephalus) brevivalva* (Shi *et al.*, 2005). 1. End of female abdomen, lateral view 2. Female subgenital plate, ventral view; 3–6. *Conocephalus (Xiphidion) oceanicus* (Le Guillou, 1841) 3. End of male abdomen, ventral view 4. Male cercus 5. End of female abdomen, lateral view 6. Female subgenital plate, ventral view; 7–10. *Conocephalus (Anisoptera) shanghaiensis* **sp. nov.** 7. End of male abdomen, dorsal view 8. End of male abdomen, ventral view 9. End of female abdomen, lateral view 10. Female subgenital plate, ventral view.

***Conocephalus (Conocephalus) sulcifrontis* Xia et Liu, 1992**
(Figs. G)

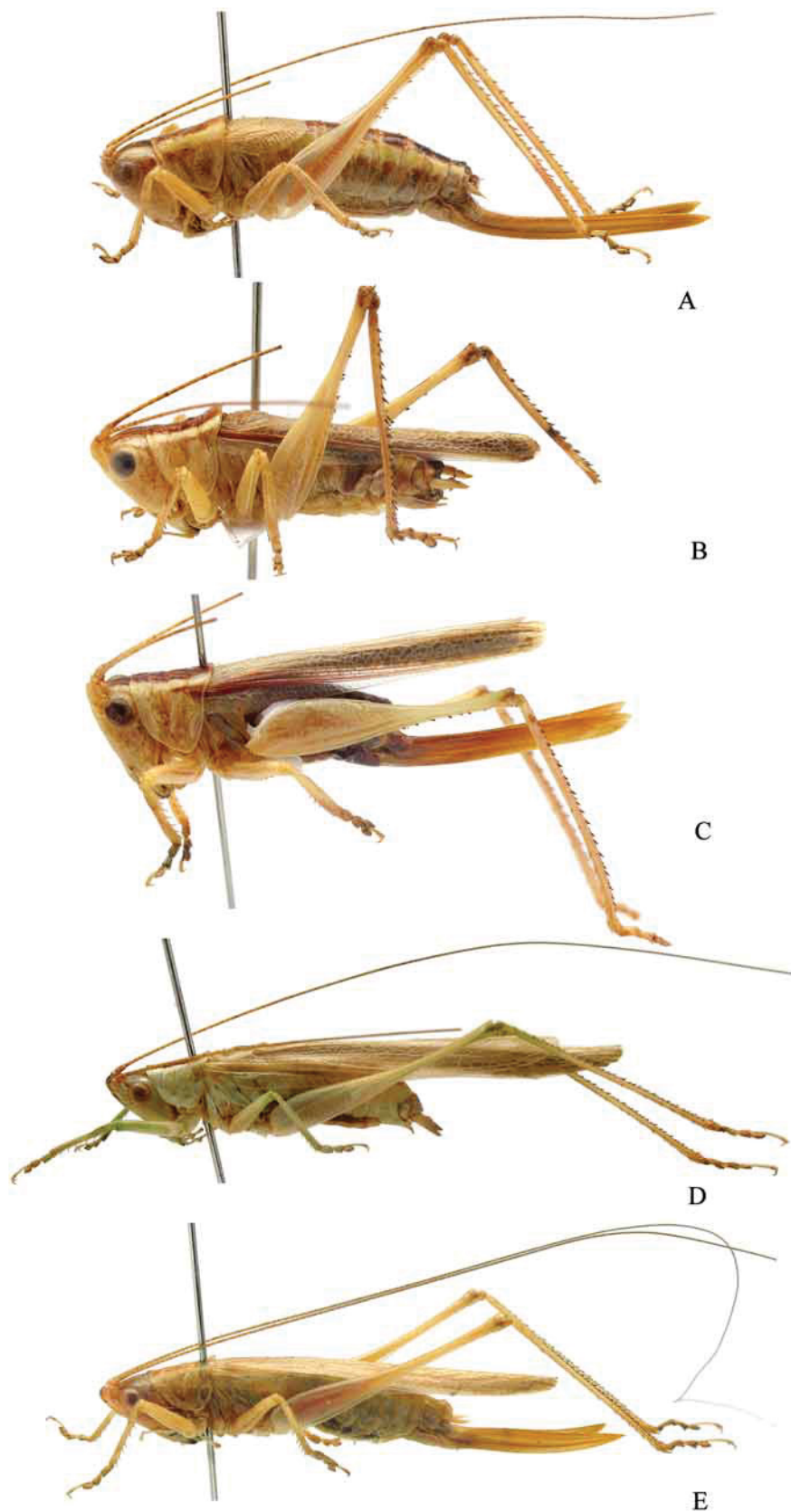
Conocephalus sulcifrontis Xia et Liu, 1992: 163

Distribution: China (Shanghai, Jiangsu).

***Conocephalus (Conocephalus) differentus* Shi et Liang, 1997**
(Figs. G)

Conocephalus differentus Shi et Liang, 1997: 213

Distribution: China (Guangdong).



FIGURES A–E. A. *Conocephalus (Conocephalus) brevivalva* (Shi *et al.*, 2005) body of female in profile; B–C. *Conocephalus (Xiphidion) oceanicus* (Le Guillou, 1841), body of male and female in profile; D–E. *Conocephalus (Anisoptera) shanghaiensis* **sp. nov.**, body of male and female in profile.



FIGURE F. Distribution map of subgenus *Amurocephalus* in China.

***Conocephalus (Conocephalus) emeiensis* Shi et Zheng, 1999**
(Figs. G)

Conocephalus emeiensis Shi et Zheng, 1999: 219

Distribution: China (Sichuan).

Subgenus *Xiphidion* Serville, 1831

Xiphidion Serville, 1831: 159; *Xiphidion* Westwood, 1838: 45; *Xiphidion* Kirby, W.F., 1890: 580; *Xiphidium* Scudder, S.H., 1897: 55; *Xiphidion* Rehn, J.A.G., 1902: 317; *Xiphidion* Rehn, J.A.G., 1905: 826; *Conocephalus (Xiphidion)* Karny, 1907: 85; *Conocephalus (Xiphidion)* Rehn, J.A.G. et Hebard, 1915: 155; *Conocephalus (Xiphidion)* Rehn, J.A.G. et Hebard, 1915: 243; *Conocephalus (Xiphidion)* Hebard, 1922: 242–248; *Xiphidion (Xiphidion)* Karny, 1926: 180; *Conocephalus (Xiphidion)* Harz, 1969: 188; *Conocephalus* Rentz, D.C.F. et Balderson, 1979: 7; *Conocephalus (Anisoptera)* Pitkin, 1980: 321; *Conocephalus (Xiphidion)* Pinedo, 1985[1984]: 269; *Conocephalus*

(*Xiphidion*) Otte, D., 1997: 44; *Conocephalus* (*Xiphidion*) Naskrecki, 2000: 164; *Conocephalus* (*Xiphidion*) Defaut [Ed.], 2001:12

Type species: *Locusta fusca* Fabricius, 1793



FIGURES G. Distribution map of subgenus *Conocephalus* in China.

***Conocephalus* (*Xiphidion*) *guangdongensis* Shi et Liang, 1997**
(Figs. H)

Conocephalus guangdongensis Shi et Liang, 1997: 211

Distribution: China (Guangdong, Guangxi).

***Conocephalus* (*Xiphidion*) *liangi* Liu et Zhang, 2007**
(Figs. H)

Conocephalus liangi Liu et Zhang, 2007: 440

Distribution: China (Guangdong).

***Conocephalus (Xiphidion) bidentatus* Shi et Zheng, 1994**
(Figs. H)

Conocephalus bidentatus Shi et Zheng, 1994: 45; *Conocephalus oceanicus* Liu et Jin, 1999: 169 (nec Guillou, 1841)

Distribution: China (Zhejiang, Anhui, Fujian, Sichuan).

***Conocephalus (Xiphidion) oceanicus* (Le Guillou, 1841) (New record from China)**
(Figs. 3–6, B–C, H)

Xiphidion oceanicum Le Guillou, 1841: 294; *Anisoptera oceanicum* Kirby, W.F., 1906: 278 *Conocephalus* Karny, 1912: 13; *Conocephalus oceanicus* Pitkin, 1980: 329; *Conocephalus (Xiphidion) oceanicus* Otte, D., 1997: 46.

Material studied. 1 male and 1 female (larva breeding), alt. 400m, WestTienmu Mountain, Zhejiang Province, July 1st–3rd 2009, Bi Wen-Xuan leg.

Distribution: China (Zhejiang), Vietnam, Philippines, Fiji, New Guinea, Samoan Islands.



FIGURES H. Distribution map of subgenus *Xiphidion* in China.

Subgenus *Anisoptera* Latreille, 1829

Anisoptera Latreille, 1829: 184; *Anisoptera* Serville, 1831: 156; *Locusta* (*Anisoptera*) Wesmaël, 1838: 593; *Phasgonura* Westwood, 1838: 45; *Anisoptera* Kirby, W.F., 1890: 580; *Anisoptera* Kirby, W.F., 1906: 274; *Conocephalus* (*Conocephalus*) Karny, 1912: 7; *Conocephalus* (*Conocephalus*) Rehn, J.A.G. et Hebard, 1915: 155; *Conocephalus* (*Conocephalus*) Harz, 1969: 179; *Conocephalus* Rentz, D.C.F. et Balderson, 1979: 7; *Conocephalus* Pitkin, 1980: 321; *Conocephalus* (*Anisoptera*) Otte, D., 1997: 37; *Conocephalus* (*Anisoptera*) Storozhenko, 2004: 74; *Conocephalus* (*Anisoptera*) Kocarek et al., 2005: 128; *Conocephalus* (*Anisoptera*) Storozhenko et Paik, 2007: 51
Type species: *Locusta dorsalis* Latreille, 1804

Conocephalus (*Anisoptera*) *gigantius* (Matsumura et Shiraki, 1908)

(Figs. I)

Xiphidium gigantium Matsumura et Shiraki, 1908: 60; *Conocephalus* (*Xiphidion*) *gigantius* Karny, 1912: 10; *Conocephalus gigantius* Kato, 1932: 46-1.

Distribution: China (Taiwan).

Conocephalus (*Anisoptera*) *japonicus* (Redtenbacher, 1891)

(Figs. I)

Xiphidium japonicum Redtenbacher, 1891: 252; *Anisoptera japonicum* Kirby, 1906: 282; *Xiphidion pulchrum* Karny, 1907: 95. Syn. n.; *Xiphidium formosanum* Matsumura et Shiraki, 1908: 59. Syn. n.; *Xiphidium divergentum* Matsumura et Shiraki, 1908: 61. Syn. n.; *Conocephalus* (*Neoxiphidion*) *japonicus* Karny, 1912: 10; *Conocephalus* (*Xiphidion*) *pulcher* Karny, 1912: 10; *Conocephalus* (*Xiphidion*) *formosanum* Karny, 1912: 10; *Conocephalus* (*Xiphidion*) *divergentus* Karny, 1912: 11; *Conocephalus* (*Xiphidion*) *japonicus* Bey-Bienko, 1929: 66; *Xiphidion japonicum* Mori, 1933: 55; *Conocephalus* (*Xiphidion*) *dimidiatus* Tinkham, 1943: 54, 59 (nec Matsumura et Shiraki, 1908); *Conocephalus minutus* Bey-Bienko, 1954: 468; *Conocephalus* (*Xiphidion*) *minutus* Harz, 1969: 109; *Conocephalus* (*Xiphidion*) *japonicum* Harz, 1969: 111; *Conocephalus divergentus* Pravdin et Cheryachovsky, 1975: 362, 369; *Conocephalus japonicus minutus* Storozhenko, 1980: 13; *Conocephalus japonicus japonicus* Storozhenko, 1986: 251; *Conocephalus* (*Anisoptera*) *japonicus japonicus* Storozhenko, 1986: 251; *Conocephalus formosanus* Liu et Jin, 1994: 115; *Conocephalus dimidiatus* Liu et Jin, 1994: 115; *Conocephalus japonicus* Kato, 1932: Pl. 40, fig. 2.

Distribution: China (Hebei, Neimenggu, Heilongjiang, Shanghai, Jiangsu, Anhui, Fujian, Henan, Hunan, Guangdong, Guangxi, Sichuan, Guizhou, Hongkong, Taiwan), Korea, Japan.

Conocephalus (*Anisoptera*) *longipennis* (De Haan, 1842)

(Figs. I)

Locusta (*Xiphidion*) *longipennis* De Haan, 1842: 189; *Xiphidium longipenne* Walker, 1869: 274; *Xiphidium spinipes* Stal, 1877: 47; *Xiphidium longicorne* Redtenbacher, 1891: 513; *Anisoptera longicorne* Kirby, 1906: 278; *Anisoptera longipenne* Kirby, 1906: 278; *Anisoptera spinipes* Kirby, 1906: 278; *Xiphidion longipenne* Karny, 1907: 92; *Xiphidion longicorne* Karny, 1907: 92; *Conocephalus* (*Xiphidion*) *longipennis* Karny, 1912: 11; *Conocephalus* (*Xiphidion*) *longipennis longipennis* Karny, 1931: 105; *Conocephalus carolinensis* Willemse, 1942: 98; *Conocephalus longipennis* Bolvar, 1913: 8.

Distribution: China (Anhui, Fujian, Henan, Guangxi, Hainan, Yunnan, Sichuan, Xizang, Taiwan), Burma, Thailand, Nepal, India, Sri Lanka, Singapore, Indonesia, Philippines.



FIGURES I. Distribution map of the species of genus *Anisoptera* in China.

Conocephalus (Anisoptera) discolor (Thunberg, 1815)

(Figs. I)

Locusta fusca Fabricius, 1793: 43; *Conocephalus discolor* Thunberg, 1815: 275; *Xiphidion fuscum* Audinet-Serville, 1831: 157; *Xiphidion fusca* Stephens, 1835: 2; *Xiphidion fuscum* Burmeister, 1838: 708; *Xiphidion fuscum* Fieber, 1853: 170; *Xiphidion concolor* Bolivar, 1873: 261; *Anisoptera fuscum* Kirby, 1906: 276; *Conocephalus (Xiphidion) fuscum* Karny, 1912: 213; *Conocephalus fuscus* Tarbinsky, 1926: 278; *Conocephalus (Xiphidion) turanicus* Bey-Bienko, 1929: 66; *Conocephalus (Xiphidion) discolor* Harz, 1969: 188; *Conocephalus (Anisoptera) discolor* Storozhenko, 1986: 250.

Distribution: China (Liaoning, Jilin, Heilongjiang, Xinjiang), Mongolia, Russia.

Conocephalus (Anisoptera) melanus (De Haan, 1842)

(Figs. I)

Locusta (Xiphidion) melaena De Haan, 1842: 189; *Xiphidion melaenum* Walker, 1869: 275; *Xiphidion nigro-geniculatum* Redtenbacher, 1891: 511; *Anisoptera melaenum* Kirby, 1906: 278; *Anisoptera nigro-geniculatum*

Kirby, 1906: 278; *Xiphidion melan* Karny, 1907: 91; *Xiphidium melanum* Matsumura ZXC Shiraki, 1908: 57; *Conocephalus (Xiphidion) melas* Karny, 1912: 11; *Conocephalus melanum* Kato, 1932: Pl. 39, fig. 3.; *Conocephalus melas* Bey-Bienko, 1957: 413; *Conocephalus melaenus* Ingrisch, 1987: 121.

Distribution: China (Jiangsu, Zhejiang, Fujian, Hubei, Hunan, Guangdong, Guangxi, Sichuan, Guizhou, Yunnan, Taiwan), Japan, Nepal, India, Thailand, Singapore, Indonesia.

***Conocephalus (Anisoptera) maculatus* (Le Guillou, 1841)**

(Figs. I)

Xiphidium maculatum Le Guillou, 1841: 294; *Locusta (Xiphidium) lepida* De Haan, 1842: 189; *Locusta (Xiphidium) continuum* Walker, 1869: 271; *Locusta (Xiphidium) maculatum* Walker, 1869: 275; *Xiphidium sinense* Walker, 1871: 35; *Anisoptera maculatum* Kirby, 1906: 278; *Xiphidion maculatum* Karny, 1907: 93; *Xiphidium maculatum* Matsumura et Shiraki, 1908: 51; *Xiphidion neglectum* Bruner, 1920: 123; *Conocephalus (Xiphidion) maculatus* Karny, 1912: 11; *Conocephalus maculatus* Bolivar, 1913: 8; *Conocephalus sinensis* Jin et Xia, 1994: 33.

Distribution: China (Beijing, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Jiangxi, Hubei, Hunan, Guangdong, Guangxi, Sichuan, Guizhou, Yunnan, Taiwan), Japan, Philippines, Malaysia, Indonesia, Burma, Thailand, Nepal, Bengal, India, Sri Lanka, New Guinea, Australia, Ethiopia, Madagascar, Africa.

***Conocephalus (Anisoptera) gladius* (Redtenbacher, 1891)**

(Figs. I)

Xiphidium gladium Redtenbacher, 1891: 514; *Conocephalus (Xiphidion) gladius* Karny, 1912: 11; *Conocephalus gladius* Kato, 1932: Pl. 47, fig. 4; *Xiphidion gladium* Mori, 1933: 55; Doi, 1933: 88.

Distribution: China (Beijing, Shanghai, Zhejiang, Fujian, Hunan, Guangxi, Sichuan, Guizhou, Taiwan), Japan, Korea, Nepal, Thailand.

***Conocephalus (Anisoptera) shanghaiensis* sp. nov**

(Figs. 7–10, D–E, I)

Male Body small, usually less than 20mm. Eyes round, project. Vertex fastigium apart from frontal fastigium, and slightly shorter than the 1st antennal segment. Prosternum bispinoes. Tegmina distinctly shorter than hind wings, but surpass hind femora. Tympanum on fore tibiae closed. Mid femora with two spines on knees. Hind femora without spines. There're 30–32 spines on each side of dorsal hind tibiae. The 10th tergite with a tiny triangular notch in the middle of its hind margin. Cerci cylindrical-shaped, comparatively slim, and with one big internal teeth with gently curved apex. Subgenital plate trapezoid, with style.

Female Similar with male. Ovipositor shorter than hind femora. Subgenital plate near quadrate.

Body light green, unicolor.

Measurement (mm): body length male 13–19, female 16–22; pronotum male 3.1–3.7, female 3.4–3.8; tegmina male 14.5–19.5, female 16.5–22.5; male 13–19, female 16–22; hind femora male 11.5–13.5, female 13.9–16.5; ovipositor 9.5–11.9.

Material studied. Holotype: male, Jiuduansha Marsh Nature Reserve, Shanghai, China, July 23rd 2009, Wu *et al.* leg.; paratype: 6 males, 6 females, same data as holotype; 18 males, 12 females, same data as holotype.

Distribution: China (Shanghai).

***Conocephalus (Anisoptera) percaudatus* Bey-Bienko, 1955**

(Figs. I)

Conocephalus caudatus Bey-Bienko, 1954: 468 (nec Morse, 1901); *Conocephalus percaudatus* Bey-Bienko, 1955: 1262; *Conocephalus (Anisoptera) percaudatus* Storozhenko, 2004: 79.

Distribution: China (Neimenggu, Heilongjiang, Ningxia), Russia.

***Conocephalus (Anisoptera) beybienkoi* Storozhenko, 1981**

(Figs. I)

Conocephalus dorsalis Storozhenko, 1980: 12; (nec Latreille, 1804); *Conocephalus (Xiphidium) dorsalis* beybienkoi Storozhenko, 1981: 1722; *Conocephalus beybienkoi* Sergeev, 1986: 45, 1993: 59; Storozhenko, 1992: 45; *Conocephalus (Anisoptera) beybienkoi* Storozhenko, 2004: 82.

Distribution: China (the Northeast), Russia (the Far East), Japan.

References

- Linda, M.P. (1980) A revision of the Pacific species of *Conocephalus* Thunberg (Orthoptera: Tettigoniidae). *Bulletin of the British Museum (Natural History)*, 41 (4), 329–330.
- Liu, X.-W. & Jin, X.-B. (1994) List of Chinese Stenopelmatoidea and Tettigonioidae (Grylloptera). *Contributions from the Shanghai Institute of Entomology*, 11, 99–118.
- Liu, X.-W. & Zhang, D.-J. (2007) A study of the genus *Conocephalus* Thunberg and descriptions of two new species from China (Orthoptera, Conocephalidae). *Acta Zootaxonomica Sinica*, 32 (2), 438–444.
- Rehn, J.A.G. & Hebard, M. (1915) A synopsis of the species of the genus *Conocephalus* found in north America, north of Mexico. *Transactions of the American Entomological Society*, 41, 158–159.
- Shi, F.-M., Wang, J.-F. & Fu, P. (2005) A review of the genus *Conanalus* Tinkham (Orthoptera, Tettigonioidae) from China. *Acta Zootaxonomica Sinica*, 30 (1), 84–86.
- Shi, F.-M. & Feng, X.-L. (2009) One new species of the genus *Conocephalus* Thunberg (Orthoptera, Tettigoniidae) from Yunan, China. *Acta Zootaxonomica Sinica*, 34 (2), 343–345.
- Xia, K.-L. & Liu, X.-W. (1992) Descriptions of three new species of Conocephalini (Orthoptera, Tettigoniidae). *Contributions from the Shanghai Institute of Entomology*, 9, 162–166.